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EXPEDITIONARY OPERATIONS IN THE LITTORAL ENVIRONMENT: GETTING MAXIMUM USE OF THE MV-22

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EXPEDITIONARY OPERATIONS IN THE LITTORAL ENVIRONMENT: GETTING MAXIMUM USE OF THE MV-22

AIM

1. This service paper argues that the United States Marine Corps (USMC) Marine Expeditionary Units (MEU), are not utilizing the MV-22 Osprey to its full capability in support of expeditionary operations within the littoral environment and provides recommendations to enhance MV-22 usage. If the Marines are going to use the MV-22 to its full potential they need to rethink the manner in which they utilize airpower in support of the Ground Combat Element (GCE), as well as how they use technology in support of expeditionary operations.

INTRODUCTION

2. This paper will explain the capabilities of the MV-22 and its uses in the littoral environment in support of expeditionary operations. It will then discuss the challenges associated with utilizing the MV-22 over long distances for air mobile operation, as well as the ability of the MV-22 to be an effective command and control and communications node. The implications for the USMC will be discussed throughout and recommendations provided.

3. The USMC and the United States Navy (USN) at large will continue to spend the majority of their time and energy in the littorals.”¹ More than 80 percent of the world’s population resides within 100 miles of a coastline and these numbers will continue to

¹ Department of the Navy, United States Marine Corps. *Expeditionary Force 21: Forward and Ready: Now and in the Future*. 2014. 9

grow.² In conjunction with the increasing population, American national interests will continue to expand across the globe as markets liberalize and become more vulnerable to exploitation or open to investment. This will see Asia, Africa, Central and South America, and the Middle East becoming the most likely regions where Marines will be required to operate.³ The challenge is that access to the littorals is becoming vastly more difficult with “the proliferation of modern conventional and cyberspace weapons to a broader range of state and non-state entities.”⁴ Unfortunately, the U.S. no longer possesses an unmatched technological advantage as it did immediately following the Cold War. Consequently, the U.S. will not be capable of dominating every military domain.⁵ In order to maintain the advantage in the expeditionary environment, the USMC must rely more on its air power force projection capabilities.⁶

4. The USMC, like many other services, will be expected to expand its missions across the spectrum of military operations with less money, equipment and personnel. This has necessitated a change in thinking about how the USMC fights and employs its limited assets. The challenge that faces the Marine Corps is that they must have the ability to project a company size element ashore to reinforce embassies, deny the enemy the use of terrain, or conduct limited objective raids in an Anti-Access Area Denial (A2/AD) environment. Although this type of mission set is nothing new for the USMC,

² *Ibid.* 9

³ *Ibid.* 9-10

⁴ *Ibid.* 8

⁵ *Ibid.* 7

⁶ *Ibid.* 8

there is the added challenge of projecting Marines over 1,000 miles ashore in the A2/AD environment.⁷

DISCUSSION

MV-22 Osprey Capabilities

5. The MV-22 was developed in the wake of the failed 1980 hostage rescue mission in Iran. The Department of Defence identified a need to develop and procure a long-range, medium-lift, vertical take-off platform that is capable of penetrating enemy territory from a maritime environment and conduct a tactical air mobile insertion to achieve national interests.⁸

6. The MV-22's speed and vertical take-off capability make it arguably the most versatile platform on the battlefield for the movement of troops and logistic supplies. Additionally, it can be configured with an array of systems, which makes it an extremely effective communications node. The MV-22 can operate at a sustained cruising speed of 260 knots and can fly without refueling for 500 nautical miles.⁹ It is also capable of mid-flight refueling via either tanker or another MV-22. These enhanced speed and range capabilities are coupled with the ability to carry 24 combat-equipped Marines five times further in half time than previous helicopters. Consequently, the MV-22 is a force multiplier and gives the USMC a distinct advantage in the littoral environment.

Integration with the Ground Combat Element (GCE)

⁷ Major Scott Como, LtCol Gregory Wartman, Doug King Col USMC (Ret). *The Expeditionary Force 21 MAGTF Ground Combat Element (GCE) Guidance to Shape Our Force*. 2015. 1.

⁸ Loren Thompson. *The Much-Maligned V-22 Osprey Is Confounding Critics*. *Forbes Magazine – Business in the Beltway*. Apr 4, 2011. 3. <http://www.forbes.com/sites/beltway/2011/04/04/the-much-maligned-v-22-osprey-is-confounding-critics/>

⁹ Boeing Aviation Corporation. *V-22 Osprey Guidebook*. 45. http://www.boeing.com/ospreynews/2011/issue_02/final_2011_2012_guidebook.pdf

7. The doctrinal role of the MV-22 is the movement of troops and logistic supplies; however, Marine Corps Combat Development Command (MCCDC) as well as force commanders must see beyond the doctrine and have the vision to utilize the MV-22 as more than another medium-lift platform. MCCDC must challenge current thinking and begin to plan and train for missions that will force-project the MV-22 to prosecute objectives that are more than a 1,000 miles from a maritime platform. The USMC has tested these capabilities in a series of exercises and experiments known as Exercise Talon Reach. The experiment that is most relevant to this paper is a 2014 trial in which a Marine unit successfully conducted a night, long-range, embassy reinforcement and non-combatant evacuation operation between Marine Corps Base 29 Palms in California and Army Base Fort Hood in Texas, a distance of 1,246 miles. The purpose of the experiment was to develop tactics, techniques and procedures (TTP) – to support future MV-22 operations into the urban littorals (including fast rope insertion) – into an objective. Additionally, the exercises were used to trial with new communication configurations (This will be discussed in greater detail later).

8. The exercises have proven that the USMC has the ability to conduct long range raids. However, GCE commanders must become much more familiar and comfortable with long-range concepts and training. Until the procurement of the MV-22, GCE commanders at the battalion and regimental level had never had to concern themselves with the employment of long-range raid platforms like the MV-22. This lack of familiarity requires both education and operational experience become engrained in ground force commanders.

Integration with Technology

9. An essential part of using the MV-22 to the limits of its capability is to ensure it serves as more than just a transport asset. In addition to transporting troops to objectives, the MV-22 is capable of acting as a node. Integration of Command, Control, Communications, Computers, Collaboration, and Intelligence (C5I) capabilities (which include long range, air-ground digital fires and inter-flight communication between the assault force and all supporting air assets) is essential for operations in dispersed environments.¹⁰

10. In the *2015 Marine Aviation Plan*, the USMC states the goal of Marine aviation: “every platform’s a sensor, every platform’s an Electronic Warfare node, every platform’s a shooter and every platform’s a connector. We intend to make this true for our legacy gear as well as our new gear.”¹¹ In order to create digital interoperability and create a robust C5I network, the USMC will have to procure equipment that “links together all of Air Combat Element (ACE) platforms, and in turn links the ACE to the Marines on the ground and at sea instantaneously.”¹² This can be done by linking every platform via Link 16, which will allow the MAGTF the ability to transmit real-time voice and digital combat information across the battlespace. Every participant in the communications link will therefore be able to electronically see the battlespace.¹³ These linkages will allow Marines who have already projected from the maritime platform and are on route to their objectives in the MV-22 to update their missions in near real time –

¹⁰ Department of the Navy, United States Marine Corps, *Infantry Officers Course Exercise Talon Reach After Action Report*. 2014. 5

¹¹ Department of the Navy. *Marine Aviation Plan 2015*. United States Marine Corps. 7

¹² *Ibid.* 7

¹³ Defense Update: *International Online Defense Magazine*.
<http://defense-update.com/products/l/link-16.htm>

based on information sent via the F-35. Likewise, this gives the higher headquarters improved situational awareness; it should allow for a significant shortening of the ‘approval chain’, with real-time and up-to-date battlefield information transmitted through the use of texting and digital imagery.

11. In order to transfer data and manage the battlespace information, commanders and decentralized Marines will need to rely on computer tablets such as iPad or Kindle type devices. These tablets are the fastest way to incorporate new data sources into aircraft platforms. Tablets will enable pilots and embarked Marines to communicate not only within the aircraft, but also with the ship to escort aircraft and Marines in other MV-22s. Once on the ground, “infantry forces will remain linked to the rest of the MAGTF, and to the aviation force architecture.”¹⁴ Applications like the Kinetic Integrated Low-cost Software Integrated Tactical Combat Handheld (KILSWITCH) enable all MAGTF players to update battlespace geometries and send digital 9-Lines and target coordinates. This type of technology allows Marines to rapidly get air support by cutting out the middleman and shortening the “Kill-Chain” through Machine-to-Machine (M2M) interface. This will result in the select GCE personnel communicating with pilots directly and direct ordinance through texting. This type of technology, if used (and if training is provided so that it is used appropriately) has the potential to revolutionize the way the USMC conducts battlefield management.

Human Dimension

12. All the technology in the world cannot bring these capabilities together unless you have highly-skilled and adaptive people to leverage the technology at their fingertips. The

¹⁴ Department of the Navy. *Marine Aviation Plan 2015*. United States Marine Corps. 18

days of recruiting high school dropouts and felons are long gone, but the USMC has to become more ruthless in who it lets into its ranks if it is going to thrive in the future. One way the USMC must address this issue is by “enhancing the assessment process for potential recruits and those undergoing initial training with improved psychological screening to augment our testing of physical and mental aptitude”.¹⁵ Specifically, the USMC are looking to use “psychological screening tools currently used by special operations forces, law enforcement organizations, and industry.”¹⁶ If the USMC does not begin to recruit more intellectually capable people into its ranks, then decentralized-technologically-enabled operations like 1,000 mile raids will be very difficult to undertake.

Challenges to be Addressed

13. There are four main challenges that must be solved if the Osprey is going to operate to its fullest capability:
 - a. MV-22 does not possess a pressurized troop compartment, which means the platform has to fly at a low enough altitude to maintain safe conditions for Marines in the back.
 - b. The lack of a pressurized cabin means the MV-22 has to fly at an altitude that requires extra fuel while maneuvering to the objective, thus requiring more Air to Air Refueling (AAR) and an overall larger logistics footprint for long-range missions.

¹⁵ General Joseph Dunford. 36th *Commandant of the Marine Corps Planning Guidance*. Department of the Navy, 2015. 5

¹⁶ *Ibid.* 5

- c. When the MV-22 is flying at higher altitudes, the risk of icing increases and becomes a flight safety issue when executing missions in less than ideal weather.
 - d. The altitude the MV-22 must fly puts it within the threat range of even some Generation 1 Man Portable Air Defense System (MANPADS), as well as all modern surface-to-air missiles. Without the aid of Electronic Warfare (EW) capable aircraft it will be almost impossible to conduct suppression of enemy air defense (SEAD) and gain access into a contested environment during forcible entry operations. Therefore, as a prerequisite for success, temporary air superiority must be gained and maintained across the MV-22's flight path, and most importantly, over the objective area.
14. Upgrades and mission specific modifications will no doubt be needed, particularly in providing a pressured cabin for troops or providing oxygen masks for troops being carried. However, even with these problems, experimentation, coupled with extensive use in Iraq, Afghanistan, and aboard navy platforms has demonstrated that the MV-22 is a reliable aircraft that can provide the MAGTF with most of the required capabilities. When considering capability requirements, it should be noted that the MV-22 will not be alone in trying to solve the problems faced in a contested environment; it will have to be used in conjunction with the F-35.

CONCLUSION

15. The USMC would be wise to not become enamored with the technology they have acquired and remember that these technological wonders are insignificant to the power of people and their minds. War remains a human endeavor and will continue to be so until the end of time. Airpower and the technological capability that come with it will only

facilitate the ability of human beings to gain an advantage over their enemies and access to littoral environments. The USMC cannot forget that everything it does is in support of the ground campaign. There is and will continue to be a tendency to think about the expanded missions the Corps will be capable of conducting now that it possesses enhanced capabilities like the MV-22; however, the Marine Corps should not be lured into temptation. The U.S. has a fine and extremely capable Army and Air Force that does not need augmentation or competition. The key is to ensure the new capabilities enhance the Corps' legally bound mission sets (amphibious and expeditionary operations), and augment the joint and multinational force when needed. In the USMC, the air component has typically worked in cooperation with the GCE and this cannot change. Finally, airpower from amphibious shipping must continue to augment the joint force.

16. This paper has examined the Marine Corps' need to leverage its airpower assets in order to be successful in expeditionary operations. Likewise, it has shown how the Marine Corps will use the MV-22 and emerging technology to integrate with the ground scheme of maneuver as well as command and control in both the air-to-air and air-to-ground environments. Lastly and most importantly, this paper has shown that without smart, well-trained people, all the technological innovation in the world is unusable. Capabilities like the MV-22 coupled with platforms like the F-35 have the potential to bring unprecedented surprise and lethality against America's and its allies' enemies. These increased capabilities are a good thing for both the Marine Corps and the nation, but there is still a great deal of work that needs to be done if the Corps is to obtain professional mastery. Marines at every level, both officer and enlisted must become

experts in the capabilities and employment of the MV-22 if they are going to thrive in the future expeditionary environment.

RECOMMENDATIONS

17. Marine Corps Combat Development Command (MCCDC) should incorporate company size long-range raids of over 500 miles into the Training and Readiness standards of Marine infantry battalions. The companies within the battalions assigned as the “helo-company” should remain the primary executer of long-range raids and should be required to maintain proficiency through yearly certification.

18. MCCDC should adopt a long-range raid profile certification program that all MEUs execute prior to deployment. Certification should include robust panning, mid-air refuel as well as inflight updates to missions. This certification should look similar to the former Marine Expeditionary Unit Special Operations Capable (MEUSOC) program.

19. MCCDC needs to incorporate C5I architecture into one MV-22 per squadron to serve as a command and control platform and node. This platform can then be dedicated to serve as both a long-range raid C5I platform and MEU’s command and control platform for all operations.

20. MCCDC should procure ‘off the shelf’ tablets for use in long-range raids and other like missions. Tablets should be loaded with KILSWITH and other collaborative technological tools.

21. Marine Corps Recruiting Command needs to recruit and assign Marines of high caliber to combat arms units. The demands of leadership in austere, decentralized

environments coupled with the ability to use advanced technologies call for a much better-rounded leader.

BIBLIOGRAPHY

- Boeing Aviation Corporation. *V-22 Osprey Guidebook*. 45.
http://www.boeing.com/ospreynews/2011/issue_02/final_2011_2012_guidebook.pdf
- Como, Scott Major, Wartman, Gregory LtCol, King, Doug Col USMC (Ret). *The Expeditionary Force 21 MAGTF Ground Combat Element (GCE) Guidance to Shape Our Force*. 2015.
- Defense Update: *Link-16*. International Online Defense Magazine.
<http://defense-update.com/products/l/link-16.htm>
- Dunford, General Joseph. *36th Commandant of the Marine Corps Planning Guidance*. Department of the Navy, 2015.
- Fleet Marine Force Manual 3-23. *Air Cooperation*. Imperial and Royal Austro-Hungarian Marine Corps FMFM 3-23.
- Fuquea, Col David C. *An Amphibious Manifesto for the 21st Century: The Corps is unprepared*. Marine Corps Gazette, Dec 2012.
- Groen, Michael S. *The Real Amphibious Challenge: The Corps' Vision for the 21st Century is in Your Hands*. Marine Corps Gazette. March 2012.
- Marine Corps Doctrinal Publication – 1 *Warfighting*. Department of the Navy. United States Marine Corps. 1989.
- Thompson, Loren. *The Much-Maligned V-22 Osprey Is Confounding Critics*. Forbs Magazine – Business in the Beltway. Apr 4, 2011. 3.
<http://www.forbes.com/sites/beltway/2011/04/04/the-much-maligned-v-22-osprey-is-confounding-critics/>
- United States. Department of the Navy, United States Marine Corps, *Infantry Officers Course Exercise Talon Reach After Action Report*. 2014.
- United States. Department of the Navy. United States Marine Corps, *Marine Aviation Plan 2015*. United States Marine Corps.
- United States. Department of the Navy, United States Marine Corps. *Expeditionary Force 21: Forward and Ready: Now and in the Future*. 2014.
- Van Creveld, Martin. *Airpower and Maneuver Warfare*. Maxwell Air Force Base: Air University Press. 1994.